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ABSTRACT

Firsthand classroom observations on the use of computers in instruction reveal some excellent uses of the computer, particularly with reading and writing instruction. Yet there are many schools in which most children are denied access to computers. The children most likely to be using computers are those who attend suburban or small city schools where concerned parents help the schools acquire the computers. Often parents are involved in donating computers, backing Parent Teacher Association purchases of computers, teaching teachers and children to use computers, demonstrating computer products as volunteers in the classroom, creating programs tailor-made to the expressed wishes of their children's teacher, and buying computers for their children in ever-increasing numbers. The use of computers actually can, and often does, enhance communication between parents and children. In some cases, teachers are sending home printouts of children's dictated stories. The existence of and the gradual increase in the enjoyment of adventure games (as well as simulations and interactive fiction) by parents and children both at home and at school or work are matched only by their phenomenal acceptance and the use of word processing programs. And both of these uses of the computer require a lot of reading. A major implication for educators is that the computer is making it even more essential that we teach children to read and to read well; students need fluent reading and rapid comprehension skills. (HOD)

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THE MICRO CAN CONNECT HOME, SCHOOL, AND COMMUNITY --
BUT IT MUST BE READ

(Running Head -- Micros Can Connect)

by

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In the past several months I have taken every possible opportunity to visit schools so that I might witness first-hand their use of computers in instruction, particularly reading or writing instruction and I've seen some excellent uses. At Marist High School, in Atlanta, teachers discussing a student problem in the teacher's lounge can type the student's name into the terminal there and then see his complete file on their screen -- nickname, grades, parent's names, test scores, and whatever else is available. In Henry County, Georgia, I've seen middle school children working at drill-and-practice reading programs on a network of 16 TRS-80 Model III computers served by one host computer placed in the reception area outside of the principal's office. In Athens, Alabama, I've seen elementary and middle school pupils using Houghton-Mifflin's Dolphin network of computer terminals to reach reading skill performance levels tested by the computer as decided by the Chapter I reading teacher in charge. In McDuffie County, Georgia, at Pine Street Elementary School in Thomson, I've seen elementary pupils rotated through several centers in a learning lab that included Centurion Versator computers and Rainbow computer-chip learning machines as centers. In Bibb County (Macon), Georgia, at Riley Elementary School, I've seen an upper elementary Chapter I reading teacher teach her classes a curriculum built around the vocabulary lists of words contained in the hand-held Texas Instruments "Speak-N-Spell."

In Suder Elementary School in Clayton County, Georgia, elementary special education teachers find computer repetition and control of attention to be especially valuable. In that school, and in all the other schools in Clayton County, each school secretary has a computer

terminal connected to the central computer in the county office. Attendance, lunch reports, and other vital district-wide communications are instantaneous. In a middle school in Clarke County (Athens), Georgia, reading teachers wheel four Apple computers into their classrooms each Thursday and use various programs from MECC (Minnesota Educational Computing Consortium) for supplementing their usual reading program. (In 1984-85, Clarke County reading teachers will assume responsibility for the computer literacy of all middle school students.)

In Cherokee County, Georgia, a social studies teacher allows middle school students to contract their social studies units and complete the social studies work at home -- so that they can use the social studies period to learn programming with their Commodore VIC computers. In another Cherokee County school, a third grade teacher conducts her basal reader group in the traditional circle while other children, in pairs and trios, rotate to the Commodore VIC on a stand in one corner of the room, where they participate in interactive word-recognition exercises programmed specifically for them by their teacher. She was able to prepare these exercises because the principal lets teachers take computers home with them, just as they take home their teachers' manuals and grade books.

In Bethlehem Elementary School of Barrow County, Georgia, fourth graders create tests for their classmates on a TRS-80 Model IV, a portable computer belonging to their teacher. In a trailer behind the school, learning-disabled children cluster around a six-inch SONY television screen displaying programs that they themselves type into their Teacher's Timex-Sinclair computer (cost, \$39.95). They copy programs from the books of easy program listings that abound in area bookstores. And,

also in that school, gifted children learn programming on four Commodore-64 computers lined up in a row in the librarian's work room. When not in use by the "gifted teacher" this little room is constantly filled with teachers and individual children or teachers with groups of twelve or more children who seem not to mind that only four of their number can actually type in responses at the keyboard. The programs they select are mostly public domain programs made available by their dealer.

In Oconee County Elementary School in Watkinsville, Georgia, teachers keep their ears tuned for the tell-tale musical tones emitted by their TI-99/4A computers. Since the school has a "pod" for each grade level, the single computer serving the classrooms for that level is kept in the circular hall that connects them. Children are sent out into the hall to work with the computer. By listening to the tones, teachers can tell whether their students are (1) still there, (2) successful, or (3) unsuccessful.

Yet, after all these examples, I must say that in a great many schools most children are denied access to computers. The children most likely to be using computers are those who attend suburban or small city schools where concerned parents help the schools acquire the computers. Two weeks ago I visited a suburban Georgia elementary school which had only three Apple computers purchased by the school district -- but it had six computers donated by a parent who was president of the company which manufactured them. These six computers were very busy on the day that I observed them in the little workroom off the library. One was not working, but five kindergarteners were using

those which were. No adult had been in the room until I entered. Two fourth graders, the "trained" room monitors, were busy loading disks for the programs the kindergarten children asked to use. They also were continually explaining what key to push. In that same county school district, another elementary school has nearly all of its children involved with its nine Apple computers, and yet, just down the road, I visited a school (in that same district) that had only one computer - and that was standing unused on a desk in one corner of the library. On the desk next to it lay four or five disks, all that were available to potential users.

This lack of uniformity within a school system is not unusual; nor is great variation among school districts. More than anything else, it highlights the impact of parents on the school curriculum. Parents are donating computers, backing PTA purchases of computers, teaching teachers and children to use computers, demonstrating computer products as volunteers in the classroom, creating programs tailor-made to the expressed wishes of their children's teacher, and buying computers for their children in ever-increasing numbers.

Some schools are opening their doors in the evening so that parents can learn with the same computers that their children use during the school day. That may help to decrease the gap that is rapidly developing between the "computer-haves" and the "computer-have-nots." When parents and their children are both excited about computing, they help each other read programs, solve man-machine dilemmas, and get to know each other better as they interact. It's too bad that more schools don't check out computers to their pupils. To my knowledge, the only

school which does so is one located in Colonial Beach, Virginia. I wonder how many parents there have learned to compute on computers checked out to their children.

The use of computers actually can, and often does, enhance communication between parents and children. A young father, Colin M., has bragged to me about two things. The first was that his four-year-old son was learning to use the EARLY LEARNING module which came with his Texas Instrument 99/4A computer. The second was that one evening the son called upon his two-year-old sister to demonstrate what she had learned under his tutelage. And one of my own students, whose conversation is filled with references to her own three-year-old, enthused, "He wants to come back to the University and see 'Ticky Bear ABC watch the cake. He really likes the 'pewter'."

In some cases, teachers are sending home printouts of children's dictated stories. At Barrow School in Athens, Georgia, a first grade teacher (in her last year before retirement) overcame her own fear of computers and taught her children to write their own rhymes using the word-processing program called BANK STREET WRITER (Scholastic). Soon this dynamic teacher was teaching three parents how to (1) take student dictation using BANK STREET WRITER, and (2) help first graders actually type in their own stories which could then be printed out and displayed on the bulletin board or sent home to the parents of the authors.

This program, which she used with the school's Apple computer, is designed for children who are in fourth grade or above. Yet it is so easily learned that three other audiences have started using it, primary grade pupils, my graduate students, and secretaries employed by small

businesses. Since secretaries need no time off to learn to use this word-processing system, small businessmen have made it the first ever program designed for children to become a best-seller to business. It's quite possible that somewhere in North America today, a business couple and their daughter have all learned to use BANK STREET WRITER, two at their offices and the other in school.

In its February 1984 issue, Consumer Reports pointed out that word processing was the most frequent use reported by respondents to its recent home computer use survey. Consumer Reports went on to describe equipment, programs, costs, advantages, and disadvantages of the most common word processor systems which can be secured for under \$1000.00. In so doing, Consumer Reports may well have led another sizable group of its readers to take the plunge and try word processing themselves.

If it were not for word processing, the computer might be only a large, fast adding machine (which it is!). But the computer's ability to store, process, sort, retrieve, and display or print words, phrases, sentences, paragraphs, letters, stories, poems, reports, and even novels makes it valuable to people who seldom add, subtract, multiply, or divide figures larger than those in their checkbooks. But word-processing use by home, school, and community is not the only unifying purpose. Computers are also used in all three environments for playing games. Two years ago I completed an investigation of the effect of computer-displayed print on the reading fluency, accuracy, and comprehension of second, fourth, and sixth grade children in the Wilkinson County, Georgia, schools. While in that vicinity, I was invited to a friend's office to see his big new IBM computer. Then, after explaining its functions and extolling the magnitude of the memory it could hold in and retrieve from

its hard disk drive, he sat down at a terminal and showed me his favorite computer game, LUNAR LANDER. I preceeded to "crash" the moon-landing vehicle three or four times before I decided that I had to leave or be late for dinner. On the way home I wondered how many businessmen spend their spare time playing computer games. It must be quite a few.

School use of computer games varies tremendously. Some librarians, like the one in Moore Elementary School in Cherokee County, Georgia, allow children to use any programs they want, just as they let children browse and choose any book they want to read. Other school officials sometimes prohibit games, pointing out that games are a waste of time. Yet there is no denying that games have a tremendous appeal to both children and adults. My wife dearly loves to play BREAKOUT on my youngest son's Atari game computer, and she also likes to try her mettle on HANGMAN with my daughter's Speak'N'Spell or my old TRS-80 Model I. Aside from her love of games, she finds the computer valuable only for the mailing list that we use to keep track of Christmas cards sent and received. Of course, I'm grateful that she used my old computer to estimate the readability levels of the set of test-preparation lessons which my publisher just released.

But I think the games in our future are not arcade games such as BREAKOUT, PACMAN, or SPACE INVADERS (not even DRAGON'S LAIR which entranced me in mid-March in the video game room in the shopping level of L'Enfante Plaza in Washington, D.C.). Arcade games are quick, because their purpose is to extract as many quarters from our pockets as can be extracted while we kill a little time. The games that I see in our future are called Adventures, and they usually involve minimal screen

graphics or no graphics -- just printed text, typed answers or choices, and more printed text.

My first Adventure was RAAKA-TU. I bought it on cassette tape from my nearest Radio Shack store. When I loaded it in my computer, I didn't know what to expect. I had read the introductory brochure which told me that I was looking for a lost temple containing fabulous treasures and I knew that I had to be careful. Then I read on the screen:

YOU ARE IN A DEEP DARK DENSE JUNGLE.

Not knowing what to do, I typed:

CLIMB TREE (I knew that two words were the usual response).

The computer replied:

CLIMB WHAT?

The dumb thing didn't know the word "tree." It took me forever to learn to GO WEST until I found the temple. Then, after being killed fifteen times (and therefore having to start over), I learned how to circle the temple, get the necessary cash to survive once inside, and then enter.

Eventually I involved all three sons, a daughter-in-law and a graduate student who played RAAKA-TU at home on his own computer. We shared successes and failures each morning as we "wasted" several evenings per week reading and writing this Adventure. And, in only a little over a month, we solved the last problems -- how to escape alive. Now you see why Adventures can't be video arcade games. The game-parlor owner would go broke if people spent only one quarter on a month's play.

It should have dawned upon me that of the women-folk I knew, only my daughter-in-law was interested. I have since found that nine of ten women and girls have little interest in the mystery and mayhem which are characteristic of Adventures. A woman, listening to one of my speeches

in Minneapolis, pointed out to me the sexist content of the existing Adventures. She was right, and if it were not possible to change formats, I'd be less enthusiastic about Adventures today. But last month a new Adventure disk arrived in the mail and my female students have given it their seal of approval. It's called IN SEARCH OF THE MOST AMAZING THING (Spinnaker) and one doesn't fight or kill when playing it. Instead, one gains points and solves problems through cooperation and negotiation. I expect it to be followed by a whole series of Adventures appealing to the fairer sex.

There are presently more than two hundred commercially-produced Adventures. Most, but not all, are intended for adult use. Most, but not all, can be rated G or PG, although a few are X-rated. Last spring, while one of my students was babysitting, the children she was sitting with told her about their parents' mildly pornographic computer program. Then they loaded it into the computer and helped her with the first few situations -- demonstrating that they were experienced and competent in playing that game!

Since computer literature can be just as innocent or just as obscene as any other kind of literature, parental guidance in the selection of Adventures is certainly worth considering. And teacher guidance of Adventures to be used in schools will probably be required. As yet only a few Adventures have been created for school use. SNOOPER TROOPS I, SNOOPER TROOPS II, and IN SEARCH OF THE MOST AMAZING THING are among the first. Like nearly all Adventures, these are too long to be completed in one or two class periods. This is a real disadvantage when it comes to their use in schools. Fortunately, at least one reading specialist, Dr. Lee Mountain, of the University of Houston, has begun creating

Adventures children can complete in an hour or less. However, few are as yet available.

However, schools are already using programs similar to Adventures. These are called "simulations." Simulations create a problem situation or context for the participant and then require the participant to make decisions which effect the outcome of the problem situation. In one well known simulation, OREGON TRAIL, the participant becomes the supply officer. Wise choices of bullets, food, oxen, etc. and wise decisions about when to hunt, camp, or trade are rewarded by successful journeys. Poor decisions lead to failure. The overall effect of the simulation is to give the participant a better understanding of the events simulated.

English teachers are beginning to make use of a different sort of modification to the Adventure game. This modification, called interactive fiction, consists of a single story beginning which eventually arrives at a point where the story can proceed in alternative directions. Perhaps the hero advertises the money he found on the street or, instead, he keeps it and says nothing. The reader is asked to decide. Once the decision has been made, the story which follows is different from that which would have followed if the other choice had been made. Then, a few paragraphs or a few thousand words later, the reader must choose again. One interactive fictional story may have twenty possible endings forming thirty or forty plot sequences. Just think, an English teacher in 1990 may receive 30 reports on the same work of fiction, each one with a different plot! My favorite interactive fiction at this moment is MAKE-A-STORY (for first graders, from Scott-Foresman Electronics' EARLY

READING MODEL), THE PIED PIPER RETURNS (for upper elementary grades, from Book Lures, Inc.) and HIS MAJESTY'S SHIP, IMPETUOUS (for high school or adult readers, from Adventure International, Inc.).

The existence of and the gradual increase in the enjoyment of Adventures (as well as simulations and interactive fiction) by parents and children both at home and at school or work is matched only by their phenomenal acceptance and use of word processing. And both of these uses require reading -- lots and lots and lots of reading! Therefore, a major implication for educators is that the computer is making it even more essential that we teach our children to read and to read well. More and more of our legal documents, our correspondence, our poetry, and our works of fiction are appearing on the computer screen. And newly written text is appearing there at an ever-increasing rate. Our students' need for fluent reading and rapid comprehension is increasing correspondingly.

As a matter of fact, on the wall of a computer classroom in Athens, Alabama, are the letters RATS, printed a foot high. The letters were put there by the reading teacher to remind students of an important procedure necessary to avoid the making of mistakes. The letters stand for these words, "Read All The Screen!"

Yes indeed. The micro can and does connect the home, school, and community -- but it must be read!